

REMARKS

Favorable reconsideration of this application, as presently amended and in light of the following discussion, is respectfully requested.

Claims 23-30 are currently pending. Claims 13-22 have been canceled without prejudice; and Claims 23-30 have been added by the present amendment. The additions to the claims are supported by the originally filed specification and do not add new matter.

In the outstanding Office Action, Claims 13-22 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,487,253 to Jones, IV et al. (hereinafter “the ‘253 patent”) in view of U.S. Patent No. 6,327,314) to Cimini, Jr. et al. (hereinafter “the ‘314 patent) and U.S. Patent No. 6,463,105 to Ramesh (hereinafter “the ‘105 patent”).

Claims 13-22 have been cancelled, without prejudice, by the present amendment. Accordingly, the rejection of Claims 13-22 is moot in light of the present amendment.

The present amendment sets forth new Claims 23-30 for examination on the merits. New Claim 23 is directed to a device for receiving signals in a wireless cellular orthogonal frequency division multiplex (OFDM) system, in which data symbols are transmitted in frequency subcarriers and timeslots, comprising: (1) a channel estimator configured to perform a channel estimation on the basis of received pilot symbols; and (2) a filter configured to perform a channel estimation for data symbols between pilot symbols, said filter being selected from a set of filters based on an estimated carrier to interference ratio, wherein said estimated carrier is a wanted carrier power value at a frequency subcarrier and a timeslot of a data symbol to be channel estimated, and said interference value is an interference reference value. New Claim 23 is supported by the originally filed specification and does not add new matter.¹

¹ See specification pg. 5, line 37 – pg. 6, line 5.

Regarding Claim 23, the '253 patent is directed to OFDM channel estimation in the presence of interference. Particularly, the '253 patent discloses for each received OFDM frequency domain burst, received training symbols T_1 and T_v are input to an IFFT/interference processing block 302 and block 302 estimates a channel impulse response based on a measurement of the noise and interference present on the training symbols and a weighted least mean square procedure.² However, Applicants respectfully submit that the '253 patent does not disclose a filter configured to perform a channel estimation for data symbols between pilot symbols, said filter being selected from a set of filters based on an estimated carrier to interference ratio, wherein said estimated carrier is a wanted carrier power value at a frequency subcarrier and a timeslot of a data symbol to be channel estimated, and said interference value is a interference reference value. Rather, the '253 patent discloses that all received training symbols are input to an IFFT/interference processing block for estimating a channel impulse response.³ The '253 patent does not disclose selecting one of a plurality of filters based on an estimated carrier to interference ratio as claimed.

The '314 patent is directed to a method and apparatus for channel estimation for multi-carrier systems. Particularly, the '314 patent discloses that the unique arrangement of filters, namely placing the time correlation based filters in the middle of the estimator, between the frequency transformation operations is very beneficial because it achieves good channel matching without need for high computational complexity.⁴ However, Applicants respectfully submit that the '314 patent does not disclose a filter configured to perform a channel estimation for data symbols between pilot symbols, said filter being selected from a set of filters based on an estimated carrier to interference ratio, wherein said estimated carrier is a wanted carrier power value at a frequency subcarrier and a timeslot of a data symbol to

² See column 3, lines 47-53.

³ See column 3, lines 47-53.

⁴ See column 5, lines 1-6.

be channel estimated, and said interference value is an interference reference value. Rather, the '314 patent discloses that the estimator provides a two dimensional filter and that the channel estimator includes two frequency transformation blocks, 201 and 203, and a plurality of filters, 202a, 202b, that exploit the time correlation of the channel parameters.⁵ The '314 patent does not disclose selecting one of a plurality of filters based on an estimated carrier to interference ratio as claimed.

The '105 patent is directed to methods and systems for estimation of the carrier to interference ratio for a wireless communication channel. However, Applicants respectfully submit that the '105 patent does not disclose a filter configured to perform a channel estimation for data symbols between pilot symbols, said filter being selected from a set of filters based on an estimated carrier to interference ratio, wherein said estimated carrier is a wanted carrier power value at a frequency subcarrier and a timeslot of a data symbol to be channel estimated, and said interference value is an interference reference value. Rather, the '105 patent discloses methods and systems for calculating a channel carrier to interference ratio of a based on variation in the channel response characteristic over the estimation evaluation time period.⁶ The '314 patent does not disclose selecting one of a plurality of filters based on an estimated carrier to interference ratio as claimed.

Accordingly, Applicants respectfully submit that the '253, '314, and '105 patents, alone or in combination, fail to establish a *prima facie* case of obviousness with respect to new Claim 23. Thus, it is respectfully submitted that Claim 23 (and dependent Claims 24-26) patentably distinguish over the '253, '314, and '105 patents.

Newly presented Claim 27 recites limitations analogous to the limitations recited in Claim 23. Accordingly, for the reasons stated above for the patentability of Claim 23,

⁵ See column 4, lines 62-66.

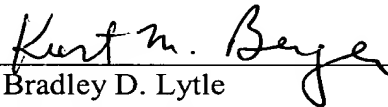
⁶ See Abstract.

Applicants respectfully submit that Claim 27 (and dependent Claims 28-30) patentably distinguish over the '253, '314, and '105 patents.

Consequently, in view of the present amendment and in light of the above discussion, the outstanding grounds for rejection are believed to have been overcome. The application as amended herewith is believed to be in condition for formal allowance. An early and favorable action to that effect is respectfully requested.

Respectfully submitted,

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